SDS enhances the activity of Proteinase K on the casein substrate; (iii) the two cationic polymers (Mackernium 006 and 007) have a slightly inhibitory activity on Proteinase K activity; and (iv) all of the cationic surfactants tested appear to inhibit Proteinase K activity (compare the tetraalkylammonium halide, benzylalkylammonium halide, or polyquaterniums curve with that for water alone, i.e., no surfactant).

Example 4:

Since it is typically difficult to extract nucleic acid from whole tissue, it can be used effectively to illustrate the efficiency of the compositions and methods of the invention. Thus, the remainder of the examples were performed using liver tissue as an exemplary whole tissue. The skilled artisan will understand, however, that the disclosed compositions and methods may also be effectively employed using a broad range of biological samples and that the invention is not to be limited to use with any sample type.

In the initial approach for evaluating the efficacy of nucleic acid release by various test treatments, liver samples were digested for a specified period of time in reaction compositions comprising surfactant and Proteinase K. The protocol included removing undigested material using centrifugation. Preliminary results using purified nucleic acid and cationic surfactants demonstrated that the cationic surfactant was forming a precipitate with the nucleic acid (data not shown). Further, this complex was being removed with the undigested tissue during centrifugation. Thus, one way to quantify the amount of nucleic acid being released from the sample, included freeing the nucleic acid from the surfactant:nucleic acid complex. Conditions were evaluated for freeing the nucleic acid from the cationic surfactant complexes as follows.